1. Look at the Arabinose marker first. This will be the most common marker indicating the presence of candida. It is present in approximately 90% of OATs. Second to that is Tartaric Acid which can be seen with candida too. It tends to show up about 10 to 15% of the time. The level of Arabinose can be deceiving in some clinical situations. A high level doesn’t always mean that a patient presents more symptomatically with yeast, or that a low level means a person is less affected. However, approximately 85% to 90% of the time the number matches up with a person’s symptoms. Either way, any elevation suggests some invasiveness of candida and warrants some treatment.

2. Next, evaluate the clostridia markers, i.e. HPHPA, 4-cresol. The HPHPA is the most common marker for clostridia and appears elevated approximately 75% more frequently than 4-cresol. Both markers indicate the presence of clostridia bacteria. Next check the HVA, VMA, and HVA/VMA ratio to see if any of these are high. Usually, with clostridia bacteria, the HVA is high normal or high and/or the HVA/VMA ratio is high. If so, the dopamine beta-hydroxylase enzyme is being affected and can indicate a more serious condition. If the levels of HVA and VMA are normal, but the HPHPA and/or 4-cresol are elevated, this too should still be viewed as a
toxic problem and addressed with supplement or antibiotic remedies.

3. Before leaving page #1 of the OAT, check the mold markers 5-Hydroxymethyl-2-Furoic, Furan-2,5-Dicarboxylic, and Furancarboxylglycine. These three are often related to aspergillus and/or penicillium mold. The most common exposure source is moldy food, i.e. fruits, grains, cheese. After addressing dietary issues, these markers will often normalize upon retesting.

At times environmental exposure is the source, i.e. mold damage in the home. Inquire with the patient about mold in their work or living environment. The Tricarballylic Acid is from a fungus found in corn and corn products. It too often normalizes as dietary changes are addressed.

Page 2 of the OAT – Oxalate Metabolites

1. High oxalate appears quite often. About 90% of the time the elevation is linked to dietary intake of high oxalate foods and/or high candida levels. Periodically, you will see high Glyceric and/or Glycolic. If these are elevated they do suggest more of an endogenous production of oxalates and the potential need for additional vitamin B6 supplementation.

2. Take a look at the Vitamin B6 marker found on page #3 under the ‘Nutritional Markers’ section. This is commonly low to low normal.
3. Like the Arabinose marker, a high oxalate number doesn’t always mean a person is more symptomatic or a low number less so, however 85% to 90+% of the time it does correlate.

Page 2 – Glycolytic, Kreb and Amino Acid Mitochondrial Metabolites

1. Succinic, Fumaric, and/or Acotinic are often high when Arabinose is high. At times you will see Citric (acid) high too with yeast. Overall, a combination of these being mildly to moderately elevated is seen about 25% to 30% of the time in association with yeast.

2. The most common marker that shows up low in these three categories is Acotinic which is clinically insignificant according to the interpretive guide related to the OAT.

3. The #1 marker that shows up high is Citric, and the second most common marker is Succinic.

4. All of these markers indicate some stress at the cellular level with regards to glycolysis and mitochondrial function.

5. Approximately 90% of the time, their values improve with effectively treating yeast and bacteria, dietary changes, and reduction in oxalates.

6. Elevated Lactic Acid is seen about 10% to 15% of the time when Oxalates are high.
Page 2 of the OAT – *Neurotransmitter Metabolites*

1. Always look at the HVA, VMA, and HVA/VMA ratio levels in correlation with the clostridia markers 4-Cresol and HPHPA because HVA or the ratio may also be high with the other bacterial markers too.

2. 90% of the time, the 5-HIAA marker will be low to low normal suggesting inefficient serotonin metabolism. This will often translate into a high normal or high 5-HIAA/Quinolinic Acid (QA) ratio.

3. About 5% to 10% of the time, the Quinolinic Acid marker will be elevated. Any elevation of the QA indicates an overproduction and can be addressed with a supplement such as Niacinamide (500mg to 1000mg daily).

Page 3 of the OAT – *Pyrimidine Metabolites*

1. Uracil will show up elevated much more commonly than Thymine. Elevation of Uracil indicates either a deficiency of folate or a conversion problem to active folate. This marker appears elevated approximately 10% to 15% of the time on OATs.

Page 3 of the OAT – *Ketone and Fatty Acid Oxidation*

1. The most common marker seen elevated is Suberic (acid) which is often associated with an overnight fast.

2. 3-Hydroxybutryic and Acetoacetic (acid) appear elevated about 25% to 30% of the time, usually in association with yeast and/or bacterial toxins. High oxalates seem to correlate too.
3. High Adipic (acid) alone seems to correlate with gelatin consumption.

4. The higher the levels of fatty acid markers the more indicative of oxidative stress in the cell. If this is the case, check the mitochondrial markers to see if some of those are high also. Elevated mitochondrial markers are further confirmation of oxidative stress.

5. In many cases, high levels of fatty acid markers in this section are correlated to yeast, oxalates and/or bacterial toxins.

6. Supplementation with L-carnitine is useful to support cell metabolism with regards to Kreb Cycle function, and will often reduce elevated metabolites when implemented alone or along with treatment for other issues such as candida.

Page 3 of the OAT – *Nutritional Markers*

1. All of the asterisked markers (Methylmalonic, Glutaric, 3-Hydroxy-3-Methylglutaric and Methylcitric), indicate a *deficiency* of that nutrient when *elevated*.

2. Approximately 90% of the time, Vitamin C will appear low indicating a need for additional Vitamin C.

3. Glutaric Acid appears elevated approximately 80% of the time when yeast is high. This is linked to a need for more Vitamin B2.

4. Vitamin B6 is often low to low normal in many individuals and indicates a need for more of this vitamin.
Page 4 of the OAT - **Indicators of Detoxification**

1. The marker most commonly seen elevated in this section is 2-Hydroxyhippuric. When elevated, it is normally just mildly high at 1.4 to 1.8. This often correlates with elevated bacteria markers. It can be high with certain foods, i.e. phenols, Nutrasweet consumption.

2. Orotic Acid is most commonly seen with bacteria markers being elevated. It only shows up high on less than 5% of OATs.

3. Pyroglutamic most often shows up high compared to 2-Hydroxybutryic. The pyroglutamic appears high in approximately 15% to 20% of OATs. This marker is linked to glutathione production and when high indicates a glutathione deficiency.

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Page 4 of the OAT – **Amino Acid Metabolites**

1. The most common findings on the Amino Acid Metabolites section are low values, which overall are clinically insignificant.

2. At times certain markers will appear mildly elevated. These slight elevations are most commonly linked to yeast and/or bacterial overgrowth.

3. Significant elevations are rare, but if present can indicate a more serious metabolic disease. Refer to OAT Interpretation Guide (*Clinical Significance of OAT*) for more information.

4. There may be environmental chemical exposures that can affect these numbers too. However, clinically focusing attention on addressing yeast, bacteria, nutrient deficiencies, and high oxalates will often address these high markers.
Page 4 of the OAT – *Mineral Metabolism*

1. Phosphoric Acid will often be low to low normal in approximately 75% of OATs. Consider testing for or supplementing with Vitamin D3 when you see this pattern.

2. High Phosphoric Acid is often seen with soda consumption. About 10% to 15% of the time it can be high when oxalates are high.